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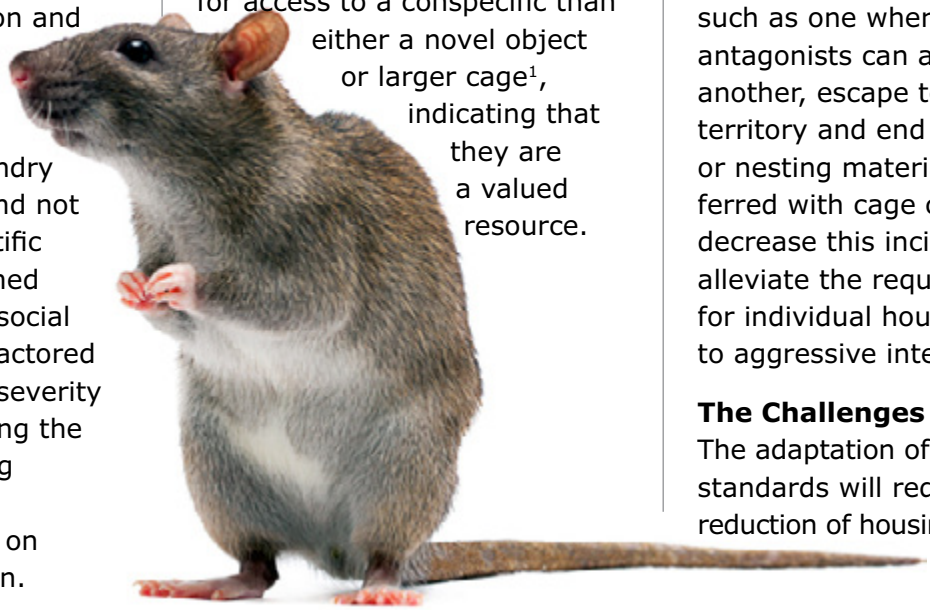
Challenges and Opportunities of Implementing EU Standards for Social Housing of Rodents

The EU Directive on the protection of animals used for scientific purposes specifically states: "Animals, except those which are naturally solitary, shall be socially housed in stable groups of compatible individuals." Even "In cases where single housing is allowed…the duration shall be limited to the minimum period necessary and visual, auditory, olfactory and/or tactile contact shall be maintained." This is a more stringent stand than previously, where "rats and mice *should* be group-housed" (emphasis added). Effectively, the new Directive requires social housing for social species as a default condition. The Directive takes a more active stance on the promotion and implementation of refinement, one of the 3Rs, stretching refinement to include husbandry and care of animals, and not just limiting it to scientific procedures. The assumed stress experienced by social species in isolation is factored in when assigning the severity of a procedure, elevating the importance of providing a behaviorally relevant environment to a level on par with alleviating pain.

Short-term deprivation of social partners or short-term solitary caging of adult rats or mice of sociable strains is considered mild severity. Complete isolation for prolonged periods of social species (dogs & primates are specifically indicated in the Directive, but this could be inferred to all species) is to be considered severe, on par with inescapable electric shock or forced swim or exercise tests with exhaustion as the end point.

The Opportunities

The opportunity to provide a socially enriched environment is valuable to the welfare of any social species, including rodents. Rats will work harder for access to a conspecific than either a novel object or larger cage[1], indicating that they are a valued resource.



Rats housed alone had higher heart rates and arterial blood pressures than those housed in a group, indicating that the solo rats were stressed[2]. There is evidence of social support, increased coping to a chronic stress, in female rats[3]. Social housing also affords rats the opportunity to engage in normal play behavior. For mice, the benefit of social housing is not always so clear, as certain strains are aggressive. In general, however, mice are also a highly social species that actively seeks the comfort of conspecifics[4], even preferring the company of a dominant to no company at all[5]. The provision of an enlarged or more complex environment, such as one where the antagonists can avoid one another, escape to their own territory and end the chase[6], or nesting material is transferred with cage change[7] may decrease this incidence and alleviate the requirement for individual housing due to aggressive interactions.

The Challenges

The adaptation of new housing standards will require either the reduction of housing densities

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from current standards or a significant capital outlay in order to purchase larger caging. Either way, the housing capacity will be reduced, and per diem cost increased proportionally. On the plus side, the Directive allows a significant transitional period (institutions have until 2017) to comply with the new housing and care standards. Studies may be delayed or blocked by the transition, but that isn't a measure of the efficiency of execution: it's about better welfare. Balancing what is desired, necessary & achievable will require the consideration of animal welfare and human and animal health and research needs.

There are a couple of excellent caveats that are specifically stated in the European guidelines regarding space allowances. One is that in long-term studies, if space allowances per individual animal fall below those indicated, priority shall be given to maintaining stable social structures. In other words, rather than break up the socially stable group because the animals have outgrown their space allowance, the physiologic and psychological benefits of remaining in an established, stable social group outweigh engineering standards. This appropriately acknowledges that space allocation is not as important as the influence of a stable social group on the animal. The second caveat is that weaned stock can be maintained at higher housing densities for the short period between weaning and sale, provided that "the animals are housed in larger enclosures with adequate enrichment, and these housing conditions do not cause any welfare deficit such as increased levels of aggression, morbidity or mortality, stereotypes and other behavioral deficits, weight loss, or other physiological or behavioral stress responses." This allows for an evidence-based rather than engineering-based standard, and gives producers the opportunity to validate their stock paradigms. In the end, while the implementation of regulatory change is never simple, the goal of improving animal welfare while acknowledging the validity and acceptability of evidence-based standards should lead to an agreeable end.

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